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MECHANICS.

254. Proposed by W. J. GREENSTREET, M. A., Editor of The Mathematical Gazette, Stroud, England.

On a smooth horizontal plane are touching each other two balls, equal, uniform, inelastic, spherical, radius x, mass M. A third uniform, smooth, elastic ball, radius y, mass m, is placed with its centre vertically above the point of contact of those balls. Its radius may vary as long as its mass remains m. When is the velocity of each inelastic ball after impact a maximum?

355. Proposed by the late G. B. M. ZERR, Ph. D.

Find the current given by a battery $\frac{1}{2}n(n+1)$ cells arranged in n rows as follows: First row, 1 cell; second row, 2 cells; third row, 3 cells; nth row, n cells. The electromotive force of each cell is E and its resistance r, while the resistances of the wires joining the positive and negative ends of the rows to the poles are as follows: First row, nr; second row, $(n-1)r$; third row, $(n-2)r$, ..., $(n-2)$nd row, $3r$; $(n-1)$st row, $2r$; nth row, r. The resistance of the two wires joining the poles to complete the circuit is r for each.

NOTES AND NEWS.

Dr. A. M. Hiltebeitel (Princeton) has been appointed an instructor in mathematics at the University of Pennsylvania.

The Chicago Section of the American Mathematical Society will hold its meeting at Minneapolis on Wednesday, Thursday, and Friday, December 28th to 30th, 1910. On Wednesday there will be a joint meeting with Section A of the American Association to hear the vice-presidential address of Professor E. W. Brown. On Friday afternoon there will be a joint meeting with Sections A and D to hear the report of the committee on Teaching of Mathematics to Engineering Students, which was appointed two years ago at Chicago. Professor E. V. Huntington, of Harvard University, is chairman of this committee. S.

At the Mathematical Conference, recently held at the University of Chicago, there were reports from several members of committees working under the International Commission on the Teaching of Mathematics. Professor J. W. A. Young, of the University of Chicago, who is one of the American Commissioners, gave an interesting account of the work which has been accomplished to date in other countries and a statement of the general scheme which has been employed in this country. Other speakers for various committees were: Charles Ammerman, McKinley High School, St. Louis, Mo.; Walter W. Hart, University of Wisconsin; Herbert E. Cobb, Lewis Institute, Chicago; John Schobinger, Harvard School, Chicago; Ernest R. Breslich, University High School, Chicago; Hiram B. Loomis, Hyde

Park High School, Chicago; Emma M. Cowles, Milwaukee-Downer College. These preliminary reports have for the most part been completed and will be presented by the American Commissioners before the International Commission at a meeting to be held some time next spring. The final report is to be made at the International Congress of Mathematicians at Cambridge, England, in the summer of 1912. S.

At the meeting of the Central Association of Science and Mathematics Teachers at Cleveland, Ohio, on November 25-26, Professor David Eugene Smith, of Teachers College, Columbia University, gave an address before the Mathematics Section on the Fundamental Reason for Teaching Mathematics in the Secondary Schools. There was also presented two important committee reports, the first on the results thus far obtained in connection with improvements in the teaching of mathematics along the lines by previous investigations, and second, on the standarizing of mathematical notation in elementary subjects. In connection with this meeting there was a session of the committee of fifteen on Geometry Syllabus working under the auspices of the N. E. A.

At the Northern Illinois Teachers Association meeting held at Chicago on November 4th and 5th, the topic for discussion throughout all the sessions was, "The Place of the Concrete in Education." Much stress was laid upon the fact that in every branch of the curriculum it is desirable to base the educational processes on concrete situations so far as is possible. It is interesting to know that this proposition has been taken up by certain teachers in the department of political economy and has been applied most effectually in reducing the teaching of this abstract subject to a concrete basis.

In the issue of *Science* for August 19, 1910, there is an interesting report on the granting of Doctor's degree by American Universities. There are numerous tables and interesting deductions drawn from the figures given. The following items are gathered from these details: The total number of doctorates in the last 13 years is 3833, of which 1787 are in the sciences, including mathematics. Of this total number Chicago has conferred 490, Columbia 480, Harvard 453, Yale 421. Of the science degrees Chicago has conferred 243, Johns Hopkins 220, Columbia 189, Yale 179, Harvard 178. In mathematics there were altogether 23 doctorates conferred by all the Universities in the year 1908, 21 in 1909, 20 in 1910, with an average of 12 for the past 10 years.

In the issues of *Science* for November 4th and 11th, 1910, there is an interesting discussion relative to the revision of the biographical index of the American Men of Science. There are numerous details showing the distribution of the first thousand and the second thousand leading men of science, according to their occupations, their geographical locations, and the institutions with which they are connected. The states containing 50 or more of the first thousand leading men of science are in order, New York 183, Massachusetts 165, Maryland (including the District of Columbia) 148, Illinois 77, Pennsylvania 60, California 50, Connecticut 50. The institutions containing 30 or more men of the first thousand are in order, Harvard 79, Columbia 48, Chicago 47, Yale 38, Cornell 35, Johns Hopkins 33, Wisconsin 30. Of the Universities having the strongest departments according to this basis, Harvard has five, standing first, namely, physics, botany, zoology, physiography and pathology. Chicago has two standing first, namely, mathematics and astronomy. Columbia, Johns Hopkins and Massachusetts Institute of Technology each have one department standing first, namely. psychology, anatomy, and chemistry respectively. The six leading universities ranked according to their total scientific strength on this basis are in order, Harvard, Chicago, Columbia, Johns Hopkins, Yale, and Cornell. S.

The opening session of the Minneapolis Meeting of the American Association for the Advancement of Science will be held on Tuesday evening, December 27. The section for Mathematics and Astronomy will begin its sessions the following morning at 10 a. m. The program for all the meetings of the Association is expected to be ready on the opening day. Papers which are to be read before Section A, should reach the Secretary, Professor G. A. Miller, before December 5.

In a recent circular issued by B. G. Teubner, of Leipzig, Germany, it is announced that their supply of the first volume of the German edition of the great mathematical encyclopedia is exhausted and they advise that those interested should secure the corresponding part of the French edition. Thirty-five volumes of the latter are in preparation. They are published in parts of about 160 pages. Fifteen of these relating mainly to arithmetic and algebra have already appeared and seventeen additional parts are said to be now in press.

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BOOKS AND PERIODICALS.

Text Book of Physics. By C. E. Linebarger, Lake View High School, Chicago. 8vo. Cloth, viii+471 pages. Price, $1.50. Boston: D. C. Heath & Co.

In writing an elementary text-book on physics, one is at a loss to know just what to select from the great abundance of important material at one's disposal. In the present text, the author has succeeded very well in selecting from the great wealth of material that which is interesting and important, and his treatment of the subject aims to be "intensive rather than extensive." The definitions are clearly stated, and the principles and laws have been logically established. The illustrations are numerous and true to reality. At the close of each chapter is a list of questions and problems designed to test the student's knowledge of the principles. F.